# SPECIFIC ASSIGNMENTS IN *EPHEMERELLINA* AND *VIETNAMELLA* (EPHEMEROPTERA: EPHEMERELLIDAE)[1]

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ABSTRACT: The presence in alate stages of vestiges of distinguishing larval cephalic horns indicates that Oriental species previously assigned to *Ephemerellina* and known only from alate stages belong to the genus *Vietnamella.* The species thus transferred include *V. ornate,* n. comb. and *V. sinensis,* n. comb. *Ephemerellina* presently is known only from temperate southern Africa.

In revising the higher classification of the pannote mayflies, certain problems with respect to correct generic assignment of species have come to our attention. Such problems often result from the fact that taxa are based on either only alate stages or only larvae, or from the fact that life stages have been incorrectly associated. This note deals with the resolution of a problem exemplifying the former situation. It is prerequisite to conducting accurate cladistics and biogeographic analyses at the species group level.

*Ephemerellina* was erected by Lestage (1924) and was the first recorded genus of Ephemerellidae from southern Africa. The genus was for many years known only from temperate South Africa, where McCafferty and deMoor (1995) have recognized three species. Allen and Edmunds (1963) transferred *Ephemerella sinensis* Hsu, a species known from adults only from Kiangsi Province, China, to *Ephemerellina.* Later, Tshernova (1972) described two subimagos from Yunnan Province, China as *Ephemerellina ornata* Tshernova, based on its similarity to *E. sinensis.* We have new evidence, however, that neither of these Oriental species belong to *Ephemerellina.*

Tshernova (1972) described the genus *Vietnamella* from Vietnam based on a single species, *V. thani* Tshernova. Although adults were unknown to her, the larvae of this genus were shown to be most unusual by their possession of many unique characteristics, including a pair of long cephalic frontal horns [illustrated by Tshernova (1972): Fig. 4]. *Vietnamella dabieshanensis* You and Su (1987) from China has been the only other species that has been described in this genus. You and Su (1987) provided the first adult description of the genus (the species was based on both larvae and adults).

Recent research on the pannote mayflies has indicated that many larval characters, especially prominent and well-sclerotized armature, are often

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retained as vestiges in the alate stages (see Provonsha 1990, McCafferty and Wang 1994). Tshernova (1972:610) described prominent vestiges of frontal cephalic horns in the subimago of E. *ornata.* These vestiges, however, are precisely where we would have predicted them to be in alate forms of *Vietnamella,* and there are no larval structures in *Ephemerellina* (see, for example the larvae of the type species of *Ephemerellina: E. barnardi* Lestage) that would have resulted in such vestiges.

Based primarily on the evidence expressed by the presence of vestigial larval character in the alate stages, we herein recognize *Ephemerellina ornata* Tshernova as *Vietnamella ornata (*Tshernova), n. comb. In addition, on the basis of the close similarity of this species with *E. sinensis* we also recognize *Ephemerellina sinensis (*Hsu) as *Vietnamella sinensis (*Hsu), n. comb.

Some larvae of the ephemerellid genus *Drunella* possess cephalic processes. However, we do not believe it is possible that *V. ornata* and *V. sinensis* belong to *Drunella,* because processes in *Drunella* larvae are much smaller than those of *Vietnamella* and therefore also appear as much smaller vestiges in alate stages. In addition, the male genital forceps of *V. ornata* and *V. sinensis* and other *Vietnamella* are entirely different than those of *Drunella* (and *Ephemerella,* where *sinensis* was first described), being in fundamental agreement with the male genitalia recently described for *V. dabieshanensis* by You and Su (1987).

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